

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

AMENDMENTS TO THE CLAIMS

Please substitute the following claims for the pending claims with the same numbers respectively:

Claims 1-9 (Cancelled):

Claim 10 (Currently amended): A flow sensor comprising:

a sensor head section which comprises:

a case having six faces, wherein at least two of said faces each include an opening disposed therein,

a pipe line through which the fluid passes, said pipe line being disposed so as to pass through the opening disposed in each of said at least two of said faces of said case,

a detector for detecting ~~the~~ a flow quantity of the fluid, and

a flow indicator having a plurality of light emission sections disposed on one of said faces of said case ~~along a longitudinal direction of said pipe line~~ and turning on ~~a number~~ at least one of said plurality of light emission sections ~~according to~~, so as to indicate the ~~detected~~ flow quantity of the fluid by at

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

least one of a speed of cycling light through said plurality of light emission sections and the number of said plurality of light emission sections emitting light,

~~wherein said case has a width perpendicular to the longitudinal direction of said pipe line, said pipe line has a width perpendicular to the longitudinal direction of said pipe line, and the width of said case is approximately equal to the width of said pipe line, and~~

wherein one of said faces of said case consists of said plurality of light emitting sections of said flow indicator and a planar face ~~whereby the width of said case can be minimized by using said plurality of light emitting sections disposed along the longitudinal direction of said pipe line; and~~

a sensor main section provided as a separate body from said sensor head section which comprises

a display section for displaying a value of the flow quantity as a numeric value, and

an output section for outputting a signal based on the value of the flow quantity.

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

Claim 11 (Previously presented): The flow sensor as claimed in claim 10, wherein said sensor head section further comprises a vortex generation member provided in said pipe line for generating a Karman vortex, and wherein said detector includes a pair of ultrasonic devices attached on an outer peripheral surface of said pipe line along a perpendicular direction of said face on which said flow indicator is disposed so that said pipe line is located between said ultrasonic devices.

Claim 12 (Previously presented): The flow sensor as claimed in claim 11, wherein said sensor head section further comprises a press member having a pair of press parts for pressing said pair of ultrasonic devices against said pipe line and a joint part for joining said pair of press parts.

Claim 13 (Previously presented): The flow sensor as claimed in claim 11, wherein said case includes a housing space for housing a circuit board disposed adjacent to one of the ultrasonic devices in the perpendicular direction of said face on which said flow indicator is disposed.

Claim 14 (Previously presented): The flow sensor as claimed in claim 13, wherein said case includes a hermetic seal for

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

hermetically sealing said pair of ultrasonic devices and a part of said pipe line.

Claim 15 (Previously presented): The flow sensor as claimed in claim 14, wherein said housing space and a space receiving said hermetic seal are connected to each other.

Claim 16 (Previously presented): The flow sensor as claimed in claim 10, wherein said sensor head section further comprises an alarm detector for detecting at least one of whether the fluid is filled in said pipe line and whether there is a bubble in the fluid, an alarm output portion for outputting an alarm signal based on a detection of said alarm detector, and wherein said flow indicator of said sensor head section displays an alarm based on the alarm signal outputted by said alarm output portion.

Claim 17 (Previously presented): The flow sensor as claimed in claim 10, wherein said sensor head section further comprises an alarm detector for detecting at least one of whether the fluid is filled in said pipe line and whether there is a bubble in the fluid, and an alarm output portion for outputting an alarm signal based on the detection of said alarm detector, and wherein said

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

display section of said sensor main section displays an alarm based on the alarm signal outputted by said alarm output portion.

Claim 18 (Previously presented): The flow sensor as claimed in claim 17, wherein when said alarm output portion outputs the alarm signal, said display section of said sensor main section displays the value of the flow quantity.

Claim 19 (Previously presented): The flow sensor as claimed in claim 18, further comprising: a compute section for computing the value of the flow quantity based on the flow quantity of the fluid, and said compute section performing different processing when the alarm signal is on.

Please add the following new claims 20-29 as follows:

Claim 20 (New): A flow sensor comprising:

- a sensor head section which comprises:
 - a case having six faces, wherein at least two of said faces each include an opening disposed therein,
 - a pipe line through which the fluid passes, said pipe line being disposed so as to pass through the

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

opening disposed in each of said at least two of said faces of said case,

a detector for detecting ~~the~~ a flow quantity of the fluid, and

a flow indicator having a plurality of light emission sections disposed on one of said faces of said case and turning on at least one of said plurality of light emission sections by at least one of a decoder and a signal level determination unit, so as to indicate the flow quantity of the fluid by at least one of a speed of cycling light through said plurality of light emission sections and the number of said plurality of light emission sections emitting light, and

wherein one of said faces of said case consists of said plurality of light emitting sections of said flow indicator and a planar face; and

a sensor main section provided as a separate body from said sensor head section which comprises

a display section for displaying a value of the flow quantity as a numeric value, and

an output section for outputting a signal based on the value of the flow quantity.

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

Claim 21 (New): The flow sensor as claimed in claim 20, wherein said sensor head section further comprises a vortex generation member provided in said pipe line for generating a Karman vortex, and wherein said detector includes a pair of ultrasonic devices attached on an outer peripheral surface of said pipe line along a perpendicular direction of said face on which said flow indicator is disposed so that said pipe line is located between said ultrasonic devices.

Claim 22 (New): The flow sensor as claimed in claim 21, wherein said sensor head section further comprises a press member having a pair of press parts for pressing said pair of ultrasonic devices against said pipe line and a joint part for joining said pair of press parts.

Claim 23 (New): The flow sensor as claimed in claim 21, wherein said case includes a housing space for housing a circuit board disposed adjacent to one of the ultrasonic devices in the perpendicular direction of said face on which said flow indicator is disposed.

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

Claim 24 (New): The flow sensor as claimed in claim 23, wherein said case includes a hermetic seal for hermetically sealing said pair of ultrasonic devices and a part of said pipe line.

Claim 25 (New): The flow sensor as claimed in claim 24, wherein said housing space and a space receiving said hermetic seal are connected to each other.

Claim 26 (New): The flow sensor as claimed in claim 20, wherein said sensor head section further comprises an alarm detector for detecting at least one of whether the fluid is filled in said pipe line and whether there is a bubble in the fluid, an alarm output portion for outputting an alarm signal based on a detection of said alarm detector, and wherein said flow indicator of said sensor head section displays an alarm based on the alarm signal outputted by said alarm output portion.

Claim 27 (New): The flow sensor as claimed in claim 20, wherein said sensor head section further comprises an alarm detector for detecting at least one of whether the fluid is filled in said pipe line and whether there is a bubble in the fluid, and an alarm output portion for outputting an alarm signal

Preliminary Amendment
Application No.: 10/849,520
Reply to Office Action dated August 10, 2005
December 12, 2005

based on the detection of said alarm detector, and wherein said display section of said sensor main section displays an alarm based on the alarm signal outputted by said alarm output portion.

Claim 28 (New): The flow sensor as claimed in claim 27, wherein when said alarm output portion outputs the alarm signal, said display section of said sensor main section displays the value of the flow quantity.

Claim 29 (New): The flow sensor as claimed in claim 28, further comprising: a compute section for computing the value of the flow quantity based on the flow quantity of the fluid, and said compute section performing different processing when the alarm signal is on.